

XLV. *Descriptions of the Species of the Curculionideous Genus Pachyrhynchus, Sch., collected by H. Cuming, Esq., in the Philippine Islands. By G. R. WATERHOUSE, Esq., V.P.E.S.*

[Read 1 March, 1841.]

Sp. 1. *Pachyrhynchus venustus*, Waterh.

Niger, lævis; capite maculâ unâ inter oculos; thorace maculis duabus suprâ, maculâque unâ ad utrumque marginem, elytris viginti-duabus ovatis ornatis; his e squamis auratis, vel aureo-cupreis, effectis.

Var.  $\beta$ . Differt elytris maculis octodecim ornatis.

Var.  $\gamma$ . Differt elytris maculis sexdecim ornatis.

Long. corp.  $10\frac{1}{2}$ — $7\frac{3}{4}$  lin., lat.  $4\frac{1}{6}$ —3 lin.

This is the largest species of *Pachyrhynchus* I am acquainted with: its form is more elongated than that of *P. moniliferus*. The body is black and very glossy; on the legs there is often a slight bluish or purplish tint. The rostrum has an oblong shallow depression, commencing at the base and becoming deeper, and terminating in a transverse line opposite the base of the antennæ; it is very delicately punctured. The thorax is equal in length and width, and less swollen in the middle than in *P. moniliferus*; numerous very minute punctures are observable on the upper surface. The elytra are about one-third broader than the thorax, of an elongate-ovate form, and exhibit neither striæ nor punctures. The metallic spots are disposed as follows:—one between the eyes, and one on each side under the eye; a tolerably large oblong spot on each side of the upper surface of the thorax, and a broad longitudinal mark on the side near the insertion of the legs. On the elytra the number of spots varies from sixteen to twenty-two, and those which I believe to be the males generally have less than the females; in all the specimens there are two spots on the suture, one on the middle of the elytra and one between this and the apex; on the outer margin of each elytron is a large oblong spot at the base, a second behind the middle, and a third extending nearly to the apex—these two last spots sometimes join; at the base of the elytra are two oblong spots placed one on each side and at a short distance from the suture; besides these are four round spots, two on each elytron, situated about midway between the suture and the outer margin and nearly

equidistant from each other and from the foremost sutural spot; between the hindermost pair of the four spots just mentioned are sometimes two other spots, which are either large and oblong or small and round. On the under side of the insect a small spot is observable between the anterior legs; the meso- and meta-sternum have each a spot on either side, and on the base of the abdomen are four spots. The legs have usually a small patch of scales on the under side of the femur near its apex. The abdominal segments are very delicately and indistinctly punctured.

Sp. 2. *Pachyrhynchus rufo-punctatus*, Waterh.\*

Niger, lævis; capite maculis tribus; thorace maculis duabus suprâ, maculâque unâ ad utrumque marginem; elytris viginti-duabus ornatis, his maculis e squamis rufis effectis.

Long. corp.  $8\frac{1}{2}$  lin.

This species approaches most nearly to the *P. venustus*, but differs in being smaller, of a less elongated form, and in having the spots of a red, or pinkish red, colour, and very nearly destitute of metallic lustre. Here the depression, which in *P. venustus* is confined to the upper surface of the rostrum, extends backwards between the eyes, so that in one species the forehead is distinctly concave, whilst in the other it is flat or even slightly convex. The elytra in the female of *P. rufo-punctatus* are shorter than in *P. venustus*, rather less convex and more dilated in the middle. The spots in these two species are disposed in the same manner.

Sp. 3. *Pachyrhynchus gemmatus*, Waterh.

Niger vel cupreus, lævis; capite suprâ maculis duabus; thorace suprâ tribus, infra duabus, et elytris sexdecim (duabus apud suturam) ornatis; his maculis e congerie squamarum metallicè splendentium effectis; squamis centralibus nitidè viridibus, circumgiranibus aureo-rubris, et indè ocellos efficientibus.

Long. corp.  $6\frac{1}{2}$ — $8\frac{1}{2}$  lin.

Var.  $\beta$ . Differt elytris maculis viginti-duabus ornatis.

The general colour of this most beautiful insect is sometimes black and sometimes of a most brilliant copper-like hue. The spots are formed of metallic scales of various hues, but generally

\* Descriptions of four species of *Pachyrhynchus*, viz. *P. rufo-punctatus*, *P. elegans*, *P. concinnus*, and *P. latifasciatus*, have been added to this paper since it was read in March, 1841. These additional species were brought before the Society in February, 1842, having been discovered in a portion of Mr. Cuming's Philippine Island collection, which had been previously overlooked.

they are golden green in the central portion of each spot, and of a gold or coppery hue on the outer portion. On the rostrum are three of these most brilliant spots, one above and one on each side, and the head has three spots disposed in the same manner. The prothoracic ring presents six spots, three above, of which two are towards the sides and about midway between the base and apex of the thorax, and one is behind in the centre. The elytra have two round spots on the suture, and other spots—sometimes seven on each elytron, and sometimes nine. The meso- and meta-sternum are each adorned with brilliant scales at the sides, and so are the abdominal segments, with the exception of the terminal one. The femora have a subapical ring (generally interrupted above) of brilliant scales. The rostrum has a large and nearly semicircular depression, occupying nearly the whole area of the basal half, and this is more or less confluent, with a largish but shallow fovea situated between the eyes.

Sp. 4. *Pachyrhynchus perpulcher*, Waterh.

Niger, lævis; thorace maculis (subocellatis) suprâ quatuor, ad latera duabus, elytris octodecim ornatis; his e squamis metallicè viridibus et cupreis effectis.

Long. corp. 6—6½ lin.

This species somewhat resembles the *P. gemmatus*, being adorned with similar brilliant ocellated spots; it is however of smaller size, has a proportionately larger thorax and the spots are differently disposed. It is at once distinguished from that species by the absence of sutural spots on the elytra, and by having four spots on the upper surface of the thorax instead of three, as in *P. gemmatus*.

Sp. 5. *Pachyrhynchus Cumingii*, Waterh.

Splendidè cupreus; elytris leviter punctato-striatis; rostro notâ transversâ basali, capite maculis oblongis tribus, harum una inter-oculari, una utrinque suboculari; thorace lineis marginalibus, et suprâ lineis tribus, et unâ transversâ interruptâ, notato; elytris lineâ marginali, lineisque duabus longitudinalibus dorsalibus, nec non lineâ transversâ per medium excurrente, atque lineis duabus abbreviatis et ad angulos basales, et ad subapicales; his lineis maculisque pallidè cyaneo-viridibus.

Long. corp. 6¾ lin., lat. 3 lin.

This beautiful species is rather larger than *P. moniliferus*; the

rostrum is proportionately broader and rather shorter, the thorax is also broader and rather less constricted before and behind, and the elytra are proportionately narrower and more elongated: it is of a rich copper-red colour, but presents a slight aeneous tint in parts and in certain lights. The rostrum is very delicately punctured and has a shallowish transverse impression in a line with the base of the antennæ, there is also a broad and very shallow oblong depression on the head—both these depressions are filled with pale blue-green scales, and there is a patch of similar scales on each side beneath the eye and another on the side of the rostrum. The thorax is smooth, has a transverse blue-green line in front and another behind, and these lines are joined by a broader mark on the sides, which passes close to the femora; on the upper surface are three longitudinal marks, and one central transverse mark; this latter is slightly interrupted, otherwise the disc of the thorax would be divided into four areas. The elytra are faintly punctured, and the punctures form striæ; on the apical portion of the elytra the punctures are more distinct: a line of scales borders the outer margin of each elytron, extending from the base almost to the apex; at the base it is recurved and runs up towards the suture, but stopping at a short distance from the suture it sends off a longitudinal line which extends very nearly to the apex of the elytra and there joins the marginal line; this longitudinal line is slightly interrupted in the middle of the elytra, where there is a transverse band. Besides these lines, all of which are formed of pale blue-green scales, there are two abbreviated longitudinal marks running from the base of the elytra on each side, and two small spots situated on the apical half of each elytron.

Sp. 6. *Pachyrhynchus elegans*, Waterh.

Splendidè cupreus; capite maculis tribus, thorace maculis duabus suprâ, maculâque unâ ad utrumque marginem; elytris maculis duodecim ornatis; his maculis magnis et subocellatis, e squamis pallidè viridibus effectis.

Long. corp.  $7\frac{1}{4}$  lin., lat.  $3\frac{1}{8}$  lin.

This species is considerably larger and more elongated in form than *P. moniliferus*. It is of a brilliant copper colour, and smooth: the forehead and base of the rostrum are concave, and the latter has a deep transverse impression; on the head above is a round spot, and under each eye is an oblong spot. The thorax has two oblique patches above, and a broadish mark on each

side. Elytra impunctate, with four largish spots at the base; in the middle of each elytron is a transverse patch, which joins a second longitudinal patch placed on the outer margin; behind the middle are two sutural spots; and on each elytron is a spot very near the apex, and another close above this: all these spots are formed of scales of a very delicate green colour, those on the elytra however have each a scaleless space in the middle. The sides of the meso- and meta-sternum, and of the two first segments of the abdomen, are adorned with green scales.

Sp. 7. *Pachyrhynchus speciosus*, Waterh.

Splendide cupreus, vel niger; elytris striato-punctatis; capite lineis tribus longitudinalibus; thorace annulis tribus elongato-ovatis; clytro utroque lineis duabus transversis humeralibus ad marginem elytrorum externum confluentibus et prope suturam; duabus centralibus et ad suturam et ad marginem externum ductis nec non confluentibus; et lineâ aream semilunarem circumdante apicali, ornato, his lineis viridisquamosis.

Long. corp.  $6\frac{1}{2}$  lin.

About equal in size to the *P. moniliferus*. The ground colour is usually like burnished copper, but sometimes black. On the head is a broad and deep impression between the eyes, and this is continuous with the usual excavation on the base of the rostrum. The scales forming the markings are of a very pale green colour, and almost destitute of metallic lustre. The head has three longitudinal marks; one central, and one under each eye. The thorax is most indistinctly punctured, and has three elongated oval rings, of pale scales, placed lengthways, one on each side, and one dorsal, which encloses an area scarcely broader than the encircling line. The elytra are rather more elongate than in *P. moniliferus*: at the base of each elytron is an elongated oval area transversely disposed, enclosed by a narrow band of scales, and extending from the outer margin nearly to the suture; on the apical portion is a curved area similarly inclosed, and besides these markings are two narrow transverse bands, which become confluent near the outer margin of the elytron and run backwards to join the apical curved marks—sometimes the two dorsal bands are joined also at the suture of the elytra. A line of scales on the prosternum nearly encircles the base of the anterior legs: the sides and central portion of the meso-sternum, nearly the whole of the meta-sternum, and the sides of the first, second, third, and

fourth abdominal segments, are adorned with scales. The femora have a subapical ring of similar scales, but it is more or less interrupted on the upper surface of each femur.

Sp. 8. *Pachyrhynchus Schœnherri*, Waterh.

Splendidè cupreus; capite maculis tribus, earum unâ inter-oculari, unâ utrinque suboculari; thorace nitido, dorso binotato, ad latera lineis duabus; elytris octodecim punctis (duabus apud suturam) ornatis; his notis, lineis maculisque pallidè viridibus.

Long. corp.  $5\frac{1}{2}$  lin., lat.  $2\frac{1}{2}$ .

This species is rather less than *P. moniliferus*, and of a narrower form, and so far agrees with *P. Erichsoni*: its thorax however is much less globose, approaching somewhat to a cylindrical form, though it is still swollen in the middle; the legs are decidedly shorter and more slender; the elytra are impunctate, and there are differences in the colouring and markings. The general colour of the insect is brilliant copper-red. The rostrum is very delicately punctured and has a somewhat shallow triangular fovea, the base of which forms a transverse line opposite the insertion of the antennæ; there is a round spot between the eyes, and another on each side beneath the eye, formed of brilliant green scales, as are all the other spots on the insect. The thorax is impunctate, and has a small spot above on each side situated midway between the base and apex, and a second larger spot just above the insertion of the femur. The elytra have eighteen smallish spots; four of these are at the base, one on each side near the outer margin, and one on each side at a short distance from the scutellum—these spots are of an oval form: in the middle of the elytra is a transverse row consisting of six round spots, and a little behind the line of these spots is an oblong spot on each side placed close to the outer margin and one placed on the suture; a second sutural spot is observable near the apex of the elytra, and two others on each side of this, two being placed rather above the line of the last mentioned sutural spot and two below and more near the tip of the elytra.

Sp. 9. *Pachyrhynchus Erichsoni*, Waterh.

Æneus; capite maculis tribus, earum unâ inter-oculari, unâ utrinque suboculari; thoracis dorso binotato, lateribus bima-

culatis; elytris maculis sexdecim ornatis; maculis omnibus flavo-squamosis.

Long. corp. 6 lin., lat.  $2\frac{2}{3}$  lin.

This species is about equal in size to *P. moniliferus*, but is of a narrower form, and has the thorax more globose. It may be distinguished from either of the other species by its brass green colour. The head and rostrum are impunctate; a slight central longitudinal groove is observable on the hinder part of the latter, and on each side of this are two shallow oblong foveæ, these and the central groove abut against the distinctly elevated anterior portion of the rostrum; a small golden spot is situated under each eye. The thorax is globose and more distinctly constricted behind than usual; on the upper surface is a smallish round spot on each side situated about midway between the base and apex of the thorax, and there is another on each side just above the base of the femur. On the elytra are sixteen tolerably large round spots, these are nearly equi-distant and disposed as follows:—four form a transverse row at the base of the elytra; near the middle is another band of four spots, and between this and the apex of the elytra is a third band of six spots, and, lastly, there is a spot near the apex of each elytron.

Sp. 10. *Pachyrhynchus Eschscholtzii*, Waterh.

Ater, nitore violaceo; thorace maculis duabus; elytris striatopunctatis, maculis quatuor rotundatis ad basin; sex ad medium, sex prope apicem, duabusque ad apicem, albescentibus.

Long. corp.  $6\frac{1}{2}$  lin.

About equal in size to the *P. moniliferus*; but the thorax is broader and rather shorter than in that insect, and the elytra rather more elongated. Rostrum with the basal half flat or slightly concave above and with a longitudinally impressed line, the fore part humped or elevated above the plane of the hinder portion. Thorax impunctate, nearly globose, but truncated before and behind, with two round spots above about midway between the base and apex, and a patch on each side just above the insertion of the leg. Elytra convex, ovate, with rows of distinct punctures. On the elytra are twenty spots, four of which are arranged in a transverse line near the base; six others form a parallel row near the middle of the elytra; this is followed by a band of eight spots; and, lastly, there is a spot on each elytron near the apex. These spots are nearly round and of moderate

size, if we except four, which are small; these are the second from the suture in each of the second and third bands. The scales forming the spots have a slight golden hue, but are very pale.

This species nearly resembles the *P. Erichsoni*, but differs in having the thorax larger and more globose; the eyes are rather larger and less convex, &c.

Sp. 11. *Pachyrhynchus latifasciatus*, Waterh.

Splendide æneus; thorace fasciâ transversâ; elytris seriatim punctatis, fasciis duabus (in medio interruptis), maculisque tribus ad apicem, ornatis; his fasciis maculisque e squamis viridibus effectis.

Long. corp. 6 lin.

More elongated, and with the thorax larger and more globose than *P. moniliferus*. Rostrum with an impressed longitudinal line on the basal half, and with a large but shallow triangular fovea, the base of which is nearly in a line with the point of insertion of the antennæ; in front of this line the rostrum is humped. Thorax convex and considerably swollen in the middle; smooth, and with a central transverse band which is much dilated on the sides. Elytra ovate, with rows of small punctures; a broad band near the base, and a second near the middle; both these bands are interrupted at the suture, and the second is curved on the side of the elytra and runs backwards along the margin. Beside these bands is an oblong dash on the apical portion of each elytron, near to, and parallel with the suture, and there are moreover two sub-apical spots. All the bands and spots are formed of pale green scales, which have very little metallic lustre.

Sp. 12. *Pachyrhynchus striatus*, Waterh.

Ater; elytris profundè punctato-striatis; capite maculâ inter oculos; thorace suprâ trimaculato; elytris duodecim-maculatis; maculis aureis; illis elytrorum ad basin quatuor, et ad apicem quatuor elongatis, ad medium quatuor, scilicet duabus externis rotundatis, et duabus dorsalibus transversis.

Long. corp. 6 lin., lat.  $2\frac{2}{3}$  lin.

This species is rather smaller than *P. moniliferus*, and of a narrower form. It is most nearly related to *P. rosco-maculatus*, and very nearly resembles that insect in its markings, but here they are of a golden hue, and instead of the cordiform spot on the

suture there are two transverse spots, one on each side, at a short distance from the suture. The elytra are deeply punctate-striated. On the upper surface of the thorax are three spots, one behind, which is triangular, and one on each side; these last are joined by a narrow subinterrupted transverse line. It is possible this may only be a variety of the *rosco-maculatus*; but the difference in sculpture and size, as well as there being two transverse spots distant from the suture in lieu of the cordiform spot on the suture, caused me to separate it. In the present group, however, I have found considerable difference in the sculpturing of specimens of the same species, and the markings in some are subject to extraordinary variations; that is, if I am right in supposing all those insects as varieties of *P. orbifer* which I have given as such.

Sp. 13. *Pachyrhynchus rosco-maculatus*, Waterh.

Niger; elytris distinctè punctato-striatis; capite maculâ inter oculos; thorace suprâ trimaculato; elytris undecim-maculatis; his maculis roseis, plerisque oblongis; maculâ unâ suturali obcordatâ.

Long. corp.  $6\frac{1}{3}$  lin., lat.  $2\frac{3}{4}$  lin.

This species is about the same size as *P. moniliferus*, but has the elytra proportionately rather narrower, and much more distinctly punctate-striated. It is readily distinguished from other species described, by the rosy hue and the peculiar form and disposition of the spots and markings. The head has the usual mark between the eyes, and one on each side under the eye. The rostrum is distinctly punctured and has a deep triangular depression, the lower boundary of which terminates in a line with the antennæ. The thorax is impunctate, and has a triangular spot in the middle behind, and a transverse spot about midway between the anterior and posterior margins and running from the sides where it is broadest towards the middle; each spot being pointed on one side and having the point directed towards the centre of the thorax: on each side just above the femur is a broadish longitudinal mark, and a transverse line joins these marks on the under side of the thorax: between the anterior femora is another line. At the base of the elytra are four oblong spots, one on each side, and one on each elytron between them and the suture; on the suture, about midway between the base and apex of the elytra, is a reversed heart-shaped spot, and opposite this (towards the sides of the elytra) is another spot on each side which is nearly

round: near the apex of the elytra are four other large and oblong spots, one on each side close to the outer margin, and one on each side between these and the suture. The elytra are distinctly punctured, and the punctures are disposed in striæ.

Sp. 14. *Pachyrhynchus jugifer*, Waterh.

Ater; capite maculâ viridi inter oculos, et alterâ utrinque sub oculos; thorace in medio lineâ transversâ, et pone hanc lineâ longitudinali a transversâ usque ad marginem posticum thoracis excurrente, his e squamis purpureo-aureis effectis, quibus latera quoque thoracis obtecta sunt; elytris striato-punctatis, squamis purpureo-aureis indutis, areâ majusculâ rotundatâ prope scutellum, et fasciâ transversâ in medio elytrorum, ad latera et ad suturam dilatâtâ, nec non lineâ per suturam a fasciâ transversâ ad notam apicalem currente, his notis denudatis

In size and form this species very nearly resembles the *P. moniliferus*. Rostrum separated from the head by a faint transverse impression, with a longitudinally impressed line on the basal half, and with the anterior half (which is moderately punctured) distinctly humped or raised above the plane of the posterior portion. On the head are three spots of golden green scales, one on the vertex, and one under each eye. Thorax but little swollen in the middle, clothed with scales, with the exception of three large and nearly square denuded patches, one on the fore part and two behind; these scaleless areas are separated from each other by narrow interspaces in the form of a transverse band in the middle, composed of green scales, and an oblong, nearly triangular, mark in the centre behind, which is formed of reddish scales. Elytra ovate, convex (less dilated than in *P. moniliferus*), punctate-striated, and clothed with scales which have a pale copper-like hue, exhibiting however but little metallic lustre; not unfrequently they have a purplish tint, and always those which border the denuded patches are more brilliant, assuming sometimes a green and sometimes a golden hue; immediately behind the scutellum is a large round (but occasionally square) denuded area, and rather behind the middle of the elytra is a transverse scaleless mark extending nearly to the sides; the anterior outline of this mark or band forms a gently waved line, but the lower boundary is more or less strongly dentated, it is most dilated in the middle and most contracted by the encroaching of the scales at a short distance on either side of the suture. A narrow black or scaleless

line runs from the transverse mark to the apex of the elytra, the extreme points of which are also scaleless. In some specimens the thorax has the sides, and a small triangular patch on the hinder part above, adorned with scales.

Sp. 15. *Pachyrhynchus phaleratus*, Waterh.

Ater; lineâ transversâ apud thoracis medium, ad utrumque latus in duos ramulos divisâ spatium inæquale circumdantes; pone transversam, lineâ centrali longitudinali; elytris lineâ mediâ transversâ, lineis duabus ad basin longitudinalibus, et pone transversam tribus longitudinalibus; his sic et marginibus externis et basalibus, aureo-viridibus.

Long. corp.  $7\frac{3}{4}$  lin., lat.  $3\frac{2}{3}$  lin.

This species somewhat resembles the *P. chlorolineatus*, but differs in being much larger; the thorax has a transverse metallic line in the middle, which towards the sides bifurcates, and, joining with a line on the lateral margin, encloses an irregular area: on the hinder half of the thorax above is a longitudinal line, and on the hinder margin is a transverse line: on the thorax beneath is a longitudinal line between the legs, a transverse line behind, and another in front; these, together with that on each side of the thorax, enclose two nearly square areas, and from the middle of each, one of the anterior pair of legs has its origin. The elytra have a transverse metallic line in the middle, and another runs parallel with and close to the outer margin as in *P. chlorolineatus*; there is also a longitudinal line extending from the base of each elytron, near the middle, (but rather nearer the suture than the outer margin,) and extending almost to the central transverse line, as in the species just mentioned; and, on the apical half of the elytra, are two other longitudinal lines, which extend from the central transverse line and join the marginal one near the apex of the elytra, sending off a small branch near the junction of the two; this line does not (as in *P. chlorolineatus*) form as it were a continuation of the longitudinal line on the basal half of the elytra, but is more removed from the suture. Another difference consists in there being a line along the suture on the apical half of the elytra in the present species. I can perceive neither striæ nor punctures on the elytra: the thorax is also smooth, but appears to be slightly indented where the metallic scales form lines. The rostrum is very broad and nearly flat, but there is a tolerably deep transverse indentation

just above the line of the insertion of the antennæ; in this indentation are some metallic scales: the rostrum moreover is very indistinctly punctured.

Sp. 16. *Pachyrhynchus decussatus*, Waterh.

Ater, lineâ transversâ apud thoracis medium et pone hanc lineis tribus longitudinalibus, nec non margine externo aureo-viridibus; elytris, lineâ centrali transversâ, lineis quatuor ad basin longitudinalibus, et pone transversam lineis duabus longitudinalibus, his lineam parvulam incurvam lateralem emittentibus; lineis omnibus sic et marginibus elytrorum splendidè aureo-viridibus.

Long. corp.  $7\frac{1}{2}$  lin., lat.  $3\frac{1}{3}$  lin.

This species approaches most nearly to *P. phaleratus* and *P. chlorolineatus*: it is, however, at once distinguished from the first of these species, by there being no metallic line on the suture of the hinder half of the elytra, and by there being two lines in a longitudinal direction on the basal half of each elytron; the last mentioned character also serves to distinguish it from *P. chlorolineatus*; as well as there being a small curved line branching out of each of the longitudinal lines on the hinder half of the elytra, (which are, as it were, a continuation of the innermost longitudinal line on the base of the elytra,) and three longitudinal lines instead of one on the hinder half of the thorax. On the head is a central longitudinal line of metallic scales situated in a broad groove between the eyes, and a transverse metallic line situated in a deep irregular groove between the antennæ; there is moreover an oblong spot under each eye, and a patch of metallic scales on each side of the rostrum, which is rather distinctly though minutely punctured. The thorax has a transverse line near the middle, which does not extend to the outer margin; a line encircles the thorax in front, but is interrupted in the middle above, and joining this line is a curved longitudinal band on each side of the thorax, and a central mark beneath: on the hinder half of the upper surface of the thorax are three longitudinal lines; all these lines, as well as some spots and markings on the under side of the body, and the lines on the elytra, are formed of brilliant golden scales, having a slight greenish hue. Besides the lines on the elytra before noticed are two small spots, one on each side near the apex. The elytra are very obscurely punctate-striated.

Sp. 17. *Pachyrhynchus concinnus*, Waterh.

Ater; elytris punctato-striatis; thorace in medio lineâ transversâ, et pone hanc lineâ longitudinali; elytris lineâ transversâ centrali, lineis duabus longitudinalibus et lineâ marginali; his lineis pallidè viridibus.

Long. corp. 6—7 lin.

This species closely resembles the *P. chlorolincatus*, but differs in being larger, in having the markings broader than in that insect, and the rows of punctures on the elytra more distinct. The longitudinal marks on the elytra are often interrupted near the transverse mark.

Sp. 18. *Pachyrhynchus multipunctatus*, Waterh.

Ater; capite maculis tribus, earum una interoculari, una utrinque suboculari; thorace nitido, dorso binotato, ad latera lineis duabus; elytris punctis plurimis ornatis; his lineis punctisque viridibus.

This species is equal in size to the *P. moniliferus*, but its form is more elongated. Scarcely a trace of any punctures is observable on the head and thorax. On the elytra are rows of very minute punctures.

Sp. 19. *Pachyrhynchus reticulatus*, Waterh.

Niger; capite lineis tribus longitudinalibus notato; thorace elytrisque lineis aureo-viridibus vel cupreis areas polygonas circumdantibus reticulatè ornatis.

The *P. reticulatus* is equal in size to *P. moniliferus*; its rostrum is narrower, and the thorax is rather shorter, and the elytra less globose. A tolerably broad groove is observable between the eyes, which runs down on to the rostrum, where it terminates, having become gradually broader, in a transverse line at the point of insertion of the antennæ: the fore part of the rostrum is thickly and finely punctured. The thorax is impunctate. The elytra are provided with rows of small but distinct punctures. The markings are all in the form of narrow lines, of brilliant, golden, green, or reddish gold scales. On the head is a longitudinal line above, and another on each side beneath the eye. The upper surface of the thorax is divided into five areas by coloured lines,—two areas in front, which are more or less confluent, two behind, and a small central one; and on each side of the thorax there is moreover a large inclosed area. The elytra have the

metallic lines so disposed that each elytron is divided into nine subequal polygonal areas, besides which there are two areas which are common to the two elytra, one on the suture near the base and the other subapical.

Sp. 20. *Pachyrhynchus rugicollis*, Waterh.

Ater; thorace distinctè rugoso-punctato, punctis squamis viridibus ornatis; elytris rufo-piceis, vel piceis, levitèr punctato-striatis, et ad apicem quasi squamis viridibus pulverulentis.

About equal in size to *P. moniliferus*. The elytra are very globose in this species, usually of a pitchy-red colour, but sometimes nearly black; they have rows of very small punctures. The rostrum has a small but deepish triangular fovea.

Sp. 21. *Pachyrhynchus moniliferus*, Esch.

Sp. 22. *Pachyrhynchus chlorolineatus*, Waterh.

Ater; thorace in medio lineâ transversâ, et pone hanc lineâ longitudinali; elytris lineâ transversâ centrali, lineis duabus longitudinalibus, et lineâ marginali, his viridibus, nonnunquàm splendide aureo, vel cupreo-viridibus.

Long. corp. 6 lin.

In size and form this species closely resembles the *P. moniliferus*; but upon placing a number of specimens of each side by side, it is evident that the *P. moniliferus* generally has the elytra rather shorter and more globose; some specimens however could not be distinguished in this respect from *P. chlorolineatus*, the markings of which are not broken up into dots. In certain situations all the specimens of *chlorolineatus* had the slender green lines, with which they are adorned, quite destitute of metallic lustre; whilst in other localities the specimens were all marked with brilliant metallic lines, generally of a golden green colour, and sometimes having a coppery hue. I do not find any specimens which perfectly link these varieties; but in *P. orbifer* there is a similar difference in the colouring of specimens from different situations, and there are intermediate varieties.

Sp. 23. *Pachyrhynchus orbifer*, Waterh.

Niger; thorace in medio fasciâ transversâ, et pone hanc plagâ longitudinali a transversâ usque ad marginem posticum thoracis excurrente, his e squamis cæruleo-viridibus effectis;

elytris squamis cæruleo-viridibus indutis, arcis 7-rotundatis denudatis.

Long. corp. 6 lin., lat. 3 lin.

In size and form this species closely resembles the *P. monili-ferus*. Head and rostrum with distinct scattered punctures, the former with a longitudinal groove above, which runs into a large triangular fovea on the basal half of the rostrum. The scales on these parts are arranged so as to form a line on the head, in fact, there filling up the longitudinal groove; a patch on each side under the eye, and another on each side of the apical half of the rostrum. Thorax subglobose; truncated before and behind, and with very minute punctures, which are rather widely scattered. The uncovered and the scaly parts of the thorax are about equal in proportion: the markings formed by the scales may be described as a broad, transverse, mesial band above,—a central broad mark connecting this with the posterior margin, and a very broad band covering the sides; or, a more accurate idea might perhaps be conveyed by describing the thorax as covered with scales, with the exception of an anterior central patch above,—more or less divided behind by a slender line of scales; sometimes nearly divided into two circles, and sometimes into two squares;—and two quadrate large denuded patches behind. Elytra convex, subovate (generally less inclining to a globose form than in *P. monili-ferus*), punctured in striæ, the punctures for the most part distinctly separated; the surface of the elytra is covered with scales, with the exception of two transverse bands, each composed of three round (or nearly round) large denuded areas; the first of these bands is situated near the base of the elytra, and the second rather behind the middle; the three circular areas in each are separated by narrow lines of scales, but between the outermost area of each, and the outer margin of the elytra, there is a considerable space: besides these areas there is a seventh at the apex of the elytra, which is rather small, and generally throws out a short branch on each side, which runs for a short distance along the outer margin of the elytron. All the scales are of a greenish blue colour, but those which are nearest to the denuded spaces are much paler than the rest, and form conspicuous pale lines encircling the scaleless parts. The femora have each two interrupted rings of scales.

Of this species Mr. Cuning brought home an immense number of specimens. There were also in that gentleman's collection many specimens of each of several varieties (or rather what I believe to be varieties) which I will proceed to notice.

Var. *α*. This agrees with the above description, excepting that the scales, instead of being of a dull bluish colour, have a brilliant metallic lustre, chiefly golden green, but intermixed are scales of gold, copper, and azure colours.

Between this variety, and the specimens from which the description is taken, are others which are semi-metallic.

Var. *β*. Differs from var. *α*, in having the denuded areas on the elytra confluent; but the three forming the anterior band are still distinctly separated from the posterior three. The scales on the thorax, moreover, occupy less space than in var. *α*.

In this variety, the denuded spots on the elytra being larger than in var. *α*, they necessarily contract the scaly portion, and this, by a gradual increase of the naked parts, is by degrees contracted (in a series of specimens I have before me) until the elytra might be described as black, with a narrow band of brilliant scales at the base, and running down the outer margin almost to the apex, a second band in the middle, which is also very narrow, and a subapical band interrupted at the suture. The scales on the thorax are here also confined to a narrow mesial transverse line, a very slender longitudinal line connecting this with the hinder margin, and a line on each lateral margin. Again, there are specimens in which the metallic fasciæ on the elytra are extremely narrow, and in parts interrupted; and, lastly, I find individuals in which the central fascia is obliterated, and nearly all the scales from the thorax are wanting.

All these varieties have brilliant metallic scales. There are one or two others which are interesting. One, in which the scales are brilliant metallic green, in which the fasciæ on the elytra, especially the central one (which is moderately broad), are broken up by narrow lines, in the region of the striæ of punctures, into oblong spots. Another like the last, but with the fasciæ narrower and less metallic. Again, in some specimens the scales have less of the metallic lustre, are very narrow and broken up into dots; and among these some have the scales green and others blue; and these last completely run into, as it were, the *P. moniliferus*: and even between *moniliferus* and *P. chlorolineatus* there are intermediate specimens, viz. specimens in which the little bead-like spots, arranged in lines, which characterize the *P. moniliferus*, are less distinctly separated, and almost form uninterrupted lines as in *P. chlorolineatus*. But in cases in which the fascia of the varieties of *P. orbifer* become extremely slender, they are always distinguishable from the *P. chlorolineatus* by these fasciæ being dentated (not even, smooth

lines as in the insect last mentioned), throwing out little processes here and there in situations where, if carried to a greater extent, they would divide the denuded parts of the elytra into the circular areas. Departing from the typical *P. orbifer* in another direction, we find specimens in which nearly all the scales are obliterated, excepting those paler scales which encircle the rounded areas; these varieties approach to the *P. reticulatus*. Lastly, there are specimens in which there are no scales, and as these appendages rub off, it might be presumed these scaleless individuals were old specimens; a supposition which would be correct in some, but not in all, instances. In some of the bottles full of these insects brought home by Mr. Cuming, I found mixed with the *P. orbifer* (and especially with the variety just described as approaching to *P. reticulatus*) numerous specimens in which the scales had evidently been rubbed off—a scale or two only being left here and there; but in one bottle there were a great number of specimens, all of which were *entirely* destitute of scales, and among these were some in which the elytra were quite soft and readily admitted the pin, whilst generally the elytra were so hard that I was obliged to bore a hole with a needle before I could pass the pin through the insect; these black specimens, moreover, nearly always had the elytra more globose and shorter than in *P. orbifer*: on these specimens I founded the *P. inornatus*.

I have said that in *P. orbifer* the elytra have rows of small punctures which are distinctly separated; generally these punctures are more distinct in the specimens from which my chief description is taken; in those with metallic colouring they are less distinct, and sometimes scarcely perceptible: in some of these, however, the punctures are even more distinct than in the type: sometimes the elytra are sulcated, and have punctures in the grooves. I have specimens before me even in which the elytra are deeply sulcated; but these specimens are all more or less crippled, perhaps by some accident while in the pupa state.

From the above observations it will be seen, that there is considerable difficulty in arriving at a satisfactory discrimination of the species of this genus; and as connected with this subject I may mention, that the specimens as they were collected by Mr. Cuming were thrown into bottles of spirit. They were collected in the different islands of the Philippine group, but unfortunately, by an oversight, the labels on the bottles indicating the localities were not attended to when the specimens were mounted. But this much I can affirm, that, generally speaking, those which I have presumed to be varieties of *P. orbifer*, &c., were not mixed

together in the same bottle. There was not *one* of the metallic varieties of *P. orbifer*, for instance, found in a bottle which contained many hundreds of specimens having dull scales, and from which the detailed description is drawn up. Again, the specimens of *P. chlorolineatus* with dull green markings were not mixed with those with marks formed of metallic scales. Those varieties of *orbifer* which approach so near to the *P. moniliferus* were not found mixed up with the hundreds of specimens of that species brought home by Mr. Cuming. I recollect, moreover, perfectly noticing that the varieties of *P. orbifer* having narrow metallic bands were not in the same bottle as those in which the elytra are covered with metallic scales, with the exception of seven circular areas,—in fact, var. *a*.

On the whole I incline to the belief that *P. chlorolineatus*, *P. moniliferus*, and *P. orbifer*, and the intermediate varieties noticed, are distinct races of the same species—varieties produced by some local causes: and this opinion was strengthened by my finding somewhat analogous cases in some other species. After mounting, out of various bottles, a number of specimens of the *Agestrata Luzonica* (Esch.), all of which were nearly of the same size, I was struck with finding a number of specimens (in a bottle by themselves) which were half as large again as those I had previously pinned. Of the *Pyrgops inops* (Scho.), I found all the specimens in one bottle destitute of any metallic markings, whilst those in another were richly ornamented with golden scales forming spots and bands.

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